

REMARKS

This case has been carefully reviewed and analyzed, and reconsideration and favorable action is respectfully requested.

Claims 1, 4, 5, 7, 9, 11 and 13 were originally rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Responsive to this, claims 1, 4, 5, 7, 9, 11 and 13 are amended according to the Examiner's instructions. Therefore, it is believed that, by the amendments, the rejection under 35 U.S.C. 112, second paragraph should be removed.

In addition, the specification is also corrected to correspond to the amended claims.

Claims 1 and 5 were originally rejected under 35 U.S.C. 102(b) as being anticipated by Wojnarowski et al. (US-5,108,825).

However, the Examiner does not reject claims 2-4 and 6-14.

Responsive to this, claim 2 is deleted, and claim 1 is amended which is substantially the combination of original claims 1 and 2 so as to make the claimed invention more distinguishably patentable over the prior art cited by the Examiner.

In addition, claim 6 is deleted, and claim 5 is amended which is substantially the combination of original claims 5 and 6 so as to make the claimed invention more distinguishably patentable over the prior art cited by the Examiner.

In comparison, it is believed that the Wojnarowski reference does not teach "a method for making a printed circuit board having jumper lines, comprising the

steps of: a) making a printed circuit board; b) coating or printing a high dielectric value material on the printed circuit board to form an isolation layer; c) forming multiple pads in the isolation layer of the high dielectric value material, thereby exposing part of the printed circuit board not covered by the high dielectric value material; and d) coating or printing a high conductive material on the isolation layer of the high dielectric value material to connect the multiple pads, thereby forming a planar jumper layer that is connected to the printed circuit board through the pads” as disclosed in the amended claim 1 of the claimed invention.

In addition, it is believed that the Wojnarowski reference does not teach “a method for making a printed circuit board having jumper lines, comprising the steps of: a) determining a pre-estimated value of an effective dielectric constant; b) determining a shortened size of a microwave circuit according to the pre-estimated value of the effective dielectric constant and a used working frequency; c) providing a dielectric substrate that can increase the effective dielectric constant to the pre-estimated value; d) making the microwave circuit with a shortened size on the dielectric substrate; e) coating or printing an isolation layer on the microwave circuit; f) forming multiple pads in the isolation layer, thereby exposing part of the microwave circuit not covered by the isolation layer; and g) coating or printing a high conductive material on the isolation layer to connect the multiple pads, thereby forming a planar jumper layer that is connected to the microwave circuit through the pads” as disclosed in the amended claim 4 of the claimed invention.

In addition, it is believed that the Wojnarowski reference does not teach “a printed circuit board having jumper lines, comprising: a line layer, an isolation layer made of a dielectric material coated on the line layer, multiple pads formed in the isolation layer, thereby exposing part of the line layer not covered by the isolation layer, and a high conductive material coated on the isolation layer to connect the multiple pads, thereby forming a planar jumper layer that is connected to the line layer through the pads; wherein: the printed circuit board is overlapped with other circuit substrates, thereby forming a multi-layer printed circuit board” as disclosed in the amended claim 5 of the claimed invention.

In addition, it is believed that the Wojnarowski reference does not teach “a printed circuit board having jumper lines, comprising: a dielectric substrate, a metallic ground layer mounted on a first side of the dielectric substrate, and a line layer mounted on a second side of the dielectric substrate, an isolation layer made of a high dielectric value material coated on the line layer, multiple pads formed in the isolation layer, thereby exposing part of the line layer not covered by the isolation layer, and a high conductive material coated on the isolation layer to connect the multiple pads, thereby forming a planar jumper layer that is connected to the line layer through the pads” as disclosed in the amended claim 7 of the claimed invention.

In addition, it is believed that the Wojnarowski reference does not teach “a printed circuit board having jumper lines, comprising: a dielectric substrate, a metallic ground layer mounted on one side of the dielectric substrate, an isolation layer made of a high dielectric value material coated on the metallic ground layer,

multiple pads formed in the isolation layer, thereby exposing part of the metallic ground layer not covered by the isolation layer, and a high conductive material coated on the isolation layer to connect the multiple pads, thereby forming a planar jumper layer that is connected to the metallic ground layer through the pads” as disclosed in the amended claim 9 of the claimed invention.

In addition, it is believed that the Wojnarowski reference does not teach “a printed circuit board having jumper lines, comprising: a dielectric substrate made of a high dielectric value material, a metallic ground layer mounted on a first side of the dielectric substrate, a line layer mounted on a second side of the dielectric substrate, an isolation layer coated on the line layer, multiple pads formed in the isolation layer, thereby exposing part of the line layer not covered by the isolation layer, and a high conductive material coated on the isolation layer to connect the multiple pads, thereby forming a planar jumper layer that is connected to the line layer through the pads” as disclosed in the amended claim 11 of the claimed invention.

In addition, it is believed that the Wojnarowski reference does not teach “a printed circuit board having jumper lines, comprising: a dielectric substrate made of a high dielectric value material, a metallic ground layer mounted on one side of the dielectric substrate, an isolation layer coated on the metallic ground layer, multiple pads formed in the isolation layer, thereby exposing part of the metallic ground layer not covered by the isolation layer, and a high conductive material coated on the isolation layer to connect the multiple pads, thereby forming a planar jumper layer

that is connected to the metallic ground layer through the pads" as disclosed in the amended claim 13 of the claimed invention.

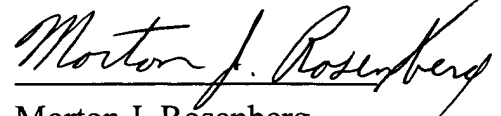
Therefore, from the above mentioned descriptions, it is apparent that the claimed invention has disclosed a printed circuit board whose structure and function are quite different from and patentably distinguishable over that of the Wojnarowski reference.

Accordingly, for all of the above-mentioned reasons, it is believed that the rejection under 35 U.S.C. 102(b) should be withdrawn, and the claims of the claimed invention should be allowable.

In view of the foregoing amendments and remarks, Applicant submits that the application is now in a condition for allowance and such action is respectfully requested. If any points remain in issue, which the Examiner feels could best be resolved by either a personal or a telephone interview, he is urged to contact Applicant's attorney at the exchange listed below.

This Amendment has been prepared by Applicants and is being filed by the undersigned attorney on Applicants' behalf.

Respectfully submitted,



Morton J. Rosenberg

Reg. No: 26,049

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Rosenberg, Klein & Lee
Suite 101
3458 Ellicott Center Drive
Ellicott City, MD 21043



MARKED-UP VERSION SHOWING CHANGES MADE
IN THE SPECIFICATION

The entire paragraph beginning at page 13, line 12 has been amended as follows:

-- Referring to Figs. 14-16, the same method in accordance with the present invention may be used make a coplanar waveguide of a microwave circuit of a printed circuit board. After the metallic ground layer 71 is mounted on the bottom side of the dielectric substrate 72 as shown in Fig. 14, a high dielectric value material 74 may be coated or printed on the metallic ground layer 71 as shown in Fig. 15. At this time, multiple circular pads 75 are formed in the high dielectric value material 74, thereby exposing the metallic ground layer 71 ~~without~~ not coated or printed with the high dielectric value material 74. Then, the high dielectric value material 74 is covered with metallic paste or high conductive material that may be filled into the circular pads 75, thereby forming a planar jumper layer 76 (as shown in Fig. 16) that is connected to the metallic ground layer 71 through the circular pads 75.--

The entire paragraph beginning at page 14, line 1 has been amended as follows:

--Referring to Figs. 17-19, the same method in accordance with the present invention may be used make another type coplanar waveguide of a microwave circuit of a printed circuit board. After the metallic ground layer 61 is mounted on the bottom side of the dielectric substrate 62 as shown in Fig. 17, a high dielectric value material 64 may be coated or printed on the metallic ground layer 61 as shown in Fig.

18. At this time, multiple circular pads 65 are formed in the high dielectric value material 64, thereby exposing the metallic ground layer 61 ~~without being~~ not coated or printed with the high dielectric value material 64. Then, the high dielectric value material 64 is covered with metallic paste or high conductive material that may be filled into the circular pads 65, thereby forming a planar jumper layer 66 (shown in Fig. 19) that is connected to the metallic ground layer 61 through the circular pads 65.--

The entire paragraph beginning at page 14, line 13 has been amended as follows:

--Referring to Fig. 20, the same method in accordance with the present invention may be used make another type coplanar waveguide of a microwave circuit of a printed circuit board. After the metallic ground layer 51 is mounted on the bottom side of the dielectric substrate 52, a high dielectric value material 54 may be coated or printed on the metallic ground layer 51. At this time, multiple circular pads 55 are formed in the high dielectric value material 54, thereby exposing the metallic ground layer 51 ~~without~~ not coated or printed with the high dielectric value material 54. Then, the high dielectric value material 54 is covered with metallic paste or high conductive material that may be filled into the circular pads 55, thereby forming a planar jumper layer 55 that is connected to the metallic ground layer 51 through the circular pads 55.--

IN THE CLAIMS

Claims 2 and 6 have been cancelled without prejudice.

Claims 1, 4, 5 and 7-14 have been amended as follows:

--1. (amended) A method for making a printed circuit board having jumper lines, comprising the steps of:

- a) making a printed circuit board;
- b) coating or printing a ~~dielectric material~~ high dielectric value material on the printed circuit board to form an isolation layer;
- c) forming multiple pads in the isolation layer of the ~~dielectric material~~ high dielectric value material, thereby exposing part of the printed circuit board ~~without~~ not covered by the ~~dielectric material~~ high dielectric value material; and
- d) coating or printing a high conductive material on the isolation layer of the ~~dielectric material~~ high dielectric value material to connect the multiple pads, thereby forming a planar jumper layer that is connected to the printed circuit board through the ~~circular~~ pads.--

--4. (amended) A method for making a printed circuit board having jumper lines, comprising the steps of:

- a) determining a pre-estimated value of an effective dielectric constant;
- b) determining a shortened size of a microwave circuit according to the pre-estimated value of the effective dielectric constant and a used working frequency;
- c) providing a dielectric substrate that ~~may~~ can increase the effective dielectric constant to the pre-estimated value;
- d) making the microwave circuit with a shortened size on the dielectric substrate;

e) coating or printing an isolation layer on the microwave circuit;

f) forming multiple pads in the isolation layer, thereby exposing part of the microwave circuit ~~without~~ not covered by the isolation layer; and

g) coating or printing a high conductive material on the isolation layer to connect the multiple pads, thereby forming a planar jumper layer that is connected to the microwave circuit through the ~~circular~~ pads.--

--5. (amended) A printed circuit board having jumper lines, comprising: a line layer, an isolation layer made of a dielectric material coated on the line layer, multiple pads formed in the isolation layer, thereby exposing part of the line layer ~~without~~ not covered by the isolation layer, and a high conductive material coated on the isolation layer to connect the multiple pads, thereby forming a planar jumper layer that is connected to the line layer through the ~~circular~~ pads; wherein:

the printed circuit board is overlapped with other circuit substrates, thereby forming a multi-layer printed circuit board.-- (Not shown in drawings)

--7 (amended) A printed circuit board having jumper lines, comprising: a dielectric substrate, a metallic ground layer mounted on a first side of the dielectric substrate, and a line layer mounted on a second side of the dielectric substrate, an isolation layer made of a high dielectric value material coated on the line layer, multiple pads formed in the isolation layer, thereby exposing part of the line layer ~~without~~ not covered by the isolation layer, and a high conductive material coated on the isolation layer to connect the multiple pads, thereby forming a planar jumper layer that is connected to the line layer through the ~~circular~~ pads.--

--8. (amended) The printed circuit board having jumper lines in accordance with claim 7, wherein the printed circuit board ~~may be~~ is overlapped with other circuit substrates, thereby forming a multi-layer printed circuit board.--

--9. (amended) A printed circuit board having jumper lines, comprising: a dielectric substrate, a metallic ground layer mounted on one side of the dielectric substrate, an isolation layer made of a high dielectric value material coated on the metallic ground layer, multiple pads formed in the isolation layer, thereby exposing part of the metallic ground layer ~~without~~ not covered by the isolation layer, and a high conductive material coated on the isolation layer to connect the multiple pads, thereby forming a planar jumper layer that is connected to the metallic ground layer through the ~~circular~~ pads.--

--10. (amended) The printed circuit board having jumper lines in accordance with claim 9, wherein the printed circuit board ~~may be~~ is overlapped with other circuit substrates, thereby forming a multi-layer printed circuit board.--

--11. (amended) A printed circuit board having jumper lines, comprising: a dielectric substrate made of a high dielectric value material, a metallic ground layer mounted on a first side of the dielectric substrate, a line layer mounted on a second side of the dielectric substrate, an isolation layer coated on the line layer, multiple pads formed in the isolation layer, thereby exposing part of the line layer ~~without~~ not covered by the isolation layer, and a high conductive material coated on the isolation layer to connect the multiple pads, thereby forming a planar jumper layer that is connected to the line layer through the ~~circular~~ pads.--

--12. (amended) The printed circuit board having jumper lines in accordance with claim 11, wherein the printed circuit board ~~may be~~ is overlapped with other circuit substrates, thereby forming a multi-layer printed circuit board.--

--13. (amended) A printed circuit board having jumper lines, comprising: a dielectric substrate made of a high dielectric value material, a metallic ground layer mounted on one side of the dielectric substrate, an isolation layer coated on the metallic ground layer, multiple pads formed in the isolation layer, thereby exposing part of the metallic ground layer ~~without~~ not covered by the isolation layer, and a high conductive material coated on the isolation layer to connect the multiple pads, thereby forming a planar jumper layer that is connected to the metallic ground layer through the ~~circular~~ pads.--

--14. (amended) The printed circuit board having jumper lines in accordance with claim 13, wherein the printed circuit board ~~may be~~ is overlapped with other circuit substrates, thereby forming a multi-layer printed circuit board.--